

## Koch, Kristine

**From:** Koch, Kristine  
**Sent:** Thursday, May 08, 2014 11:48 AM  
**To:** Jim McKenna (jim.mckenna@verdantllc.com); 'Carl Stivers'  
**Cc:** 'Jennifer Woronets'  
**Subject:** Here is a table from USGS on groundwater FYI.

**Table 5.** Summary statistics with human-health-benchmark and nonhealth-guideline exceedences for trace elements in groundwater sample climate region, 1992–2003, across the United States.—Continued

[Regions shown in figure 2A. MCLs and SMCLs are U.S. Environmental Protection Agency (USEPA) Maximum Contaminant Levels (MCLs) and Secondary Maximum Contaminant Levels (SMCLs) for public water supplies; HBSLs are Health-Based Screening Levels developed by the U.S. Geological Survey using USEPA toxicity data and methods (Toccalino and Naidu, 2002). Concentrations which, if exceeded, trigger treatment or other requirements in USEPA regulations for public water supplies; --, not applicable; <, value is less than value; =, values are in micrograms per liter except radon, for which the proposed benchmark is in picocuries per liter; reporting level is 1 microgram per liter except for boron (12 micrograms per liter), radon (80 picocuries per liter), and strontium (0.9 micrograms per liter). Percentiles below multiple censoring levels were estimated by regression on order statistics. Percentage of censored values is greater than 80; if percentiles are not estimated, actual values are shown for percentiles greater than or equal to the assessment level. 1 Level (SMCL) is a non-enforceable federal guideline to address cosmetic or aesthetic considerations of drinking water.]

| Element       | Number of samples | Percentage of samples with censored values | Concentration percentile, in µg/L or pCi/L |       |        |      |       |         | Human-health benchmark |                                     |
|---------------|-------------------|--|--|-------|--------|------|-------|---------|------------------------|-------------------------------------|
|               |                   |  | 10th                                       | 25th  | Median | 75th | 90th  | Maximum | Benchmark              | Type                                |
| Humid regions |                   |  |  |       |        |      |       |         |                        |                                     |
| Aluminum      | 1,828             | 21.9                                       | 0.49                                       | 1.2   | 3.3    | 5.8  | 16    | 1,100   | --                     | --                                  |
| Antimony      | 1,894             | 92.3                                       | < 1  | < 1   | < 1    | < 1  | < 1   | 5.0     | 6                      | MCL                                 |
| Arsenic       | 2,144             | 60.8                                       | 0.037                                      | 0.12  | 0.41   | 1.6  | 5.0   | 340     | 10                     | MCL                                 |
| Barium        | 1,944             | 2.0  | 5.5  | 18    | 47     | 110  | 240   | 5,100   | 2,000                  | MCL                                 |
| Beryllium     | 1,904             | 95.8                                       | < 1  | < 1   | < 1    | < 1  | < 1   | 16      | 4                      | MCL                                 |
| Boron         | 811               | 13.7                                       | 7.3  | 12    | 26     | 52   | 160   | 3,400   | 1,000                  | HBSL                                |
| Cadmium       | 1,936             | 94.2                                       | < 1  | < 1   | < 1    | < 1  | < 1   | 7       | 5                      | MCL                                 |
| Chromium      | 1,925             | 41.0                                       | 0.41                                       | 0.68  | 1.2    | 3.0  | 5.0   | 17      | 100                    | MCL                                 |
| Cobalt        | 1,901             | 74.5                                       | 0.021                                      | 0.055 | 0.16   | 0.50 | 1.3   | 210     | --                     | --                                  |
| Copper        | 1,940             | 42.5                                       | 0.14                                       | 0.40  | 1.0    | 3.2  | 11    | 2,000   | 1,300                  | AL                                  |
| Iron          | 3,425             | 35.2                                       | 0.18                                       | 1.49  | 11     | 220  | 2,100 | 81,000  | --                     | --                                  |
| Lead          | 1,927             | 78.9                                       | 0.011                                      | 0.033 | 0.12   | 0.40 | 1.2   | 480     | 15                     | AL                                  |
| Lithium       | 582               | 9.6  | 0.50                                       | 1.1   | 2.8    | 5.7  | 11    | 1,200   | --                     | --                                  |
| Manganese     | 3,316             | 23.5                                       | 0.37                                       | 1.4   | 13     | 98   | 370   | 28,000  | 300                    | HBSL                                |
| Molybdenum    | 1,904             | 56.1                                       | 0.056                                      | 0.16  | 0.54   | 2.0  | 5.0   | 1,500   | 40                     | HBSL                                |
| Nickel        | 1,908             | 40.6                                       | 0.12                                       | 0.30  | 1.0    | 2.2  | 4.5   | 170     | 100                    | HBSL                                |
| Radon         | 2,437             | 1.4  | 130  | 220   | 430    | 860  | 2,100 | 220,000 | 300 or 4,000           | MCL <sup>1</sup> /AMCL <sup>2</sup> |
| Selenium      | 1,935             | 85.6                                       | < 1  | < 1   | < 1    | < 1  | 1.1   | 56      | 50                     | MCL                                 |
| Silver        | 1,879             | 99.8                                       | < 1  | < 1   | < 1    | < 1  | < 1   | 1.0     | 100                    | HBSL                                |
| Strontium     | 785               | 0.1  | 36   | 74    | 160    | 370  | 890   | 16,000  | 4,000                  | HBSL                                |
| Thallium      | 521               | 91.0                                       | < 1  | < 1   | < 1    | < 1  | < 1   | < 1     | 2                      | MCL                                 |
| Uranium       | 2,313             | 62.3                                       | 0.006                                      | 0.025 | 0.17   | 1.2  | 4.5   | 440     | 30                     | MCL                                 |
| Vanadium      | 485               | 46.2                                       | 0.038                                      | 0.13  | 0.4    | 2.0  | 10    | 120     | --                     | --                                  |
| Zinc          | 1,852             | 18.7                                       | 0.36                                       | 1.4   | 4.1    | 15   | 56    | 3,300   | 2,000                  | HBSL                                |

<sup>1</sup> USEPA proposed maximum contaminant level (MCL) for radon in water.

<sup>2</sup> USEPA proposed alternative maximum contaminant level (AMCL) for radon in water: a proposed higher allowable MCL if accompanied by a multimedia mitigation strategy for indoor air.

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